

DIRECTOR OF CENTRAL INTELLIGENCE  
Science and Technology Advisory Panel

81-23431

15 OCT 1981

MEMORANDUM FOR: Director of Central Intelligence

FROM : [REDACTED], Chairman  
Science and Technology Advisory Panel

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SUBJECT : Recommendations for NIE 11-12-82

1. Over the past six to eight months, your S&T advisory Panel (STAP) has reviewed, in detail, NIE 11-12-80 (Prospects for Soviet Military Technology and R&D) in an effort to determine how the next edition might be improved. In addition, STAP members interviewed major consumers of the estimate such as William Perry, former Under Secretary of Defense for Research and Evaluation, to obtain their comments. The following incorporates both the STAP members' and interviewees' comments. They cover three broad categories: Mode of Presentation, Errors and Deficiencies, and Distribution. [REDACTED]

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## Presentation

2. By and large consumers appear to be satisfied with the basic mode of presentation of the estimate and with its underlying structure. Nevertheless STAP recommends that the Community attempt to enlarge upon the scope of the estimate and to experiment with alternate ways of presenting its understanding of Soviet Military R&D capabilities. Some specific suggestions are:

a. Consumers commented that the estimate tended to "level" the range of Soviet capabilities, an impression that will be enhanced as more and more omitted topics are included. A way must be found to display the true dynamic range of Soviet capabilities to enable the reader to grasp better strengths and weaknesses of the Soviets. For example, it may be useful to identify and discuss 5-10 areas of great strength and 5-10 areas of major weakness in the Soviet military R&D system. In effect, the estimate might better "map" the peaks and valleys rather than describe the more or less level midground in as great detail.

b. Consumers also commented on the fact that the estimate tended to present a "snapshot" in time of the Soviet system. Yet for US R&D managers what is more important is to get a sense of rates of change. The DIA "footnote" table (Volume I, p. 6) tried to do this but in a way that was sufficiently confusing that it left the readers unsatisfied. But the basic thrust of the table was good and further efforts should be expended on trying to perfect some more comprehensible presentation. Such rate-of-change estimates may not be best described in terms of rates of change of technology outputs but rather in terms of technology inputs. For example, where are the Soviets pouring in resources in terms of personnel, facilities and the like?

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c. The descriptions of Soviet progress tend to be somewhat sterile without some benchmark measures. The addition of U.S. or other Western developments may be helpful. To be sure, this suggestion has certain pitfalls: the benchmarks may not be appropriate; or they may not be truly comparable; they may add to the length of the estimate to an undesirable extent; and they may raise the perennial question of whether the community should do net assessments. Nevertheless, it is suggested that such U.S./Soviet direct technology comparisons may serve to clarify the nature of relative progress or to raise warnings where vague words may, in fact, hide indefensible conclusions.

d. Consumers commented favorably on the future weapon systems table (Volume 1, pp 36-41). This positive judgment, however, should not deter the Community from attempting in future estimates to construct even better linkages between technology progress and military capabilities. Thus issues such as the length of the Soviet R&D cycle and its possible changes, the receptivity of the Soviet military system to innovative weapons and new modes of warfare, and the like should be explored. Also, the means by which base technology enters military research should be examined, as well as the role of the Academy of Sciences in weapons development.

e. Several consumers expressed a desire for more insights into how the Soviet system operates; why it does things and how it does them. Some consumers felt that this kind of insight is necessary to put the judgments in the estimate into a broader perspective for their individual needs. Others speculated on possible implications of enhanced Soviet innovativeness or productivity (or the opposite, of growing Soviet capability to cope with some forms of advanced technology).

f. As a further elaboration of this line of thought, consumers indicated an interest in knowing more about the coupling between the military and the civil sectors of the Soviet system. It is recognized that this is a dominant feature of some aspects of Western technology, particularly in the area of computers, microelectronics, and software. Presumably there are similar couplings in the Soviet system that should be important to understand.

g. There was almost universal interest in the subject of technology transfer, still another example of the above point. What do the Soviets need? Why do they feel that importing it is crucial? Is it merely a backup approach? Or a catchup strategy?

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#### Errors and Deficiencies

3. With respect to deficiencies in the coverage of the estimate, there are a number of areas that have been identified in the critique of NIE 11-12. STAP recommends that the following be included in the next version of the estimate:

- a. Materials Technology - electronic and structural
- b. Command and Control technology - computer hardware and software.

c. Biological and Chemical Warfare Technology

d. Nuclear technology - weapons and supporting technologies such as advanced isotope separation technology.

e. Aeronautics - including low radar cross-section technology.

f. "Stealth" countermeasures.

g. Mathematics - including signal processing.

h. Cryptography - both offensive and defensive.

i. Space Technology

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4. The only area of NIE 11-12 where a faulty assessment is alleged is that of Soviet radar technology. A Defense Science Board review holds that the estimate's view that the U.S. and the Soviets are equal understates the U.S. position. But in view of the broad-ranging nature of 11-12 the fact that this is the only mention of an apparent error should probably be taken as an overall highly positive judgment on the estimate and on the interagency coordination process that produced it. It was pointed out that it took six months to write the estimate and a year to coordinate it. While intended perjoratively this does serve to underline the difficulty of the problem of producing an estimate of this sort.

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5. There are two other areas where this NIE could usefully be expanded. One of these is production technology. A broad and somewhat diffuse area but one that should be examined in greater detail. Integrated circuit production technology is certainly a part of it; presumably there are other aspects that also deserve attention.

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6. A second area that could be usefully explored is the state of health of Soviet basic science. This is what supports both applied science as well as technology, engineering, and production. One can ask how the brightest Soviet youth are distributed among the scientific disciplines, how well they are trained, and what they do and where they go after their formal training, and how they are selected for and assimilated into militarily relevant R&D activities related to national security? What measures are underway to accommodate to the changing demographic situation?

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7. With respect to the next NIE 11-12, there are two further remarks to make. First, the estimate drew heavily on Community studies of the Soviet military R&D system extending over many years. As a first effort it suffered the various problems referred to above. But it also had a rich vein to draw upon, a vein that has now been depleted. Obvious omissions can be remedied but it is important to make the next NIE 11-12 significantly better, not simply an assessment improved at the margin. This will require restocking the shelves, not simply with short-term studies directed to the above deficiencies but also long-term studies that may not be ready for the next version but which will support subsequent versions also. Our review to date has not unearthed evidence of such work. The current 11-12 can be viewed as a basecamp from which major new efforts should be mounted to

achieve significantly greater heights of insight. [redacted]

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8. The second point is that preparations for the next NIE 11-12 were started later than desirable. The next version is needed for July/August 1982, in time for the apportionment of FY 83 R&D funding. That is a year from now, six months less than the time taken to prepare the first edition. And apparently few of the supporting studies have been commissioned. STAP recommends that this receive high priority within the Community. [redacted]

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#### Distribution

9. STAP strongly recommends that a secret version of the current and follow-on versions of NIE 11-12 be produced to permit the widest distribution possible. Ideally this secret version of the current NIE should be completed in time for the presentation of the FY 83 Defense Program to Congress. Broad distribution increases the utility of the product and, at least as important, subjects its findings to the widest possible range of peer review. The Department of Defense estimates that 95% of the current NIE could appear at the secret level. STAP further recommends that, in the future, sanitized versions be released concurrently with the codeword version. [redacted]

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10. Overall, STAP feels that the current NIE 11-12 was an excellent first effort. It is essential that work begin on the next version as soon as possible and that collection efforts to fill the information gaps identified be increased. If you wish to discuss this further, I would be happy to see you at any time that is mutually convenient. Please call me directly on [redacted] in the Secretariat on extension [redacted]

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OSWR/STIC/[REDACTED] 16 October 1981

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